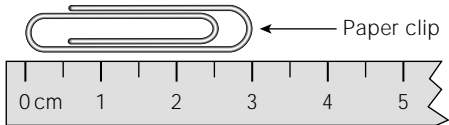
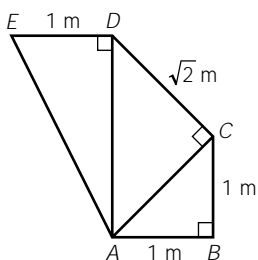


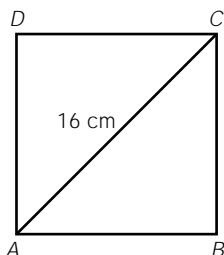
Conventional Question

- Round off the following values to (i) 3 significant figures, (ii) 4 significant figures.
 - $3.524\ 5 - \frac{11}{6} + 1.847\ 9$
 - $1.959\ 98 \div 2.8 \times 1.9$
- Referring to the figure, write down the length of the paper clip.
 - Find the degree of accuracy in the measurement.
- Expand $(3 - 2x)(3 + 2x)$.
- If $2(Ax + 3)(x - 4) \equiv 4x^2 + Bx + C$, find the constants A , B and C .
- Solve the simultaneous equations $\begin{cases} 3x - y = 13 \\ 2x + 3y = -6 \end{cases}$.
- Rationalize the denominator of $\frac{4\sqrt{3}}{\sqrt{8}}$.
- Estimate the values of the following expressions and state the strategies used.
 - $3.05 \times (349.89 \div 20.98)$
 - 484.1×8.02
- Factorize $3(x^2 + 1)^2 - 12(x^2 + 1) + 12$.
- Solve the simultaneous equations $\begin{cases} 2x - 5y = 2 \\ 3x + 2y = 22 \end{cases}$.
 - By the result of (a), solve the simultaneous equations $\begin{cases} 2(a - b) - 5(a + b) = 2 \\ 3(a - b) + 2(a + b) = 22 \end{cases}$.
- The ratio of the age of Amy to that of Bonnie is 4 : 3 now. 5 years ago, the ratio of their ages was 3 : 2. What is the current age of each of them?

11. Find the area of pentagon $ABCDE$ in the figure.

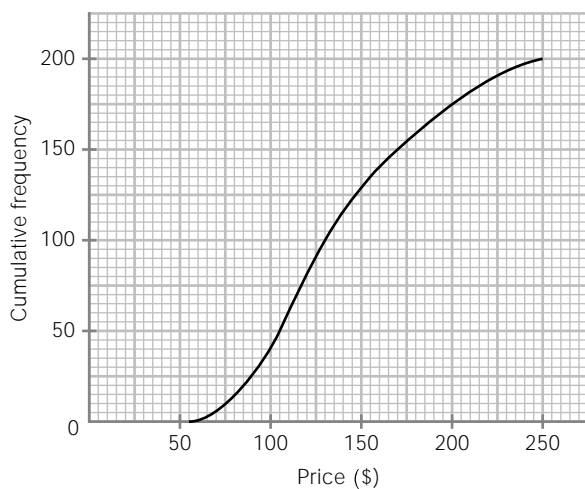


12. In the figure, $ABCD$ is a square. If the length of diagonal AC is 16 cm, find the area of square $ABCD$.



13. The following figure shows the prices of 200 books in a bookstore.

Prices of 200 books in a bookstore

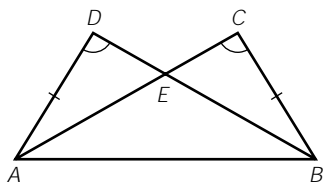


- (a) Find
- the lower quartile.
 - the median.
 - the upper quartile.
- (b) Find the percentage of books whose prices are \$155 or above.

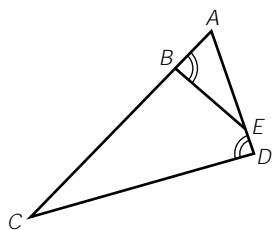
14. The following shows the weights (in kg) of school bags of 40 students in S2A.

| | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1.4 | 3.2 | 0.9 | 1.8 | 2.6 | 4.2 | 2.3 | 2.8 | 1.9 | 1.7 |
| 4.0 | 2.5 | 2.7 | 3.8 | 3.1 | 2.9 | 1.9 | 1.8 | 1.3 | 2.0 |
| 1.9 | 3.5 | 2.8 | 2.6 | 2.2 | 2.4 | 1.7 | 1.1 | 1.5 | 1.8 |
| 2.7 | 3.1 | 2.9 | 1.5 | 1.8 | 2.4 | 2.3 | 1.6 | 2.1 | 2.9 |

- (a) Construct a frequency distribution table using 0.5 kg - 0.9 kg as the first class interval.
 (b) Draw a frequency polygon.
15. Patrick measures his height and the result is 175 cm, correct to 3 significant figures.
- (a) Find the relative error of the height in the form of $\frac{1}{n}$.
 (b) Find the percentage error of the height. (Give your answer correct to 3 significant figures.)
16. In the figure, AC and BD intersect at E , $AD = BC$ and $\angle ADB = \angle ACB$.

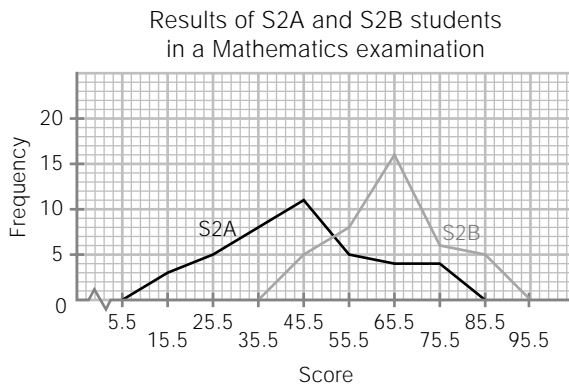


- (a) Prove that $\triangle ADE \cong \triangle BCE$.
 (b) Prove that $\triangle AEB$ is an isosceles triangle.
17. In the figure, ABC and AED are straight lines, $\angle ABE = \angle ADC$.



- (a) Prove that $\triangle ABE \sim \triangle ADC$.
 (b) If $AB = 2$, $AE = 4$ and $BC = 8$, find ED .
18. Victor is going to buy 4 items in a shop with prices of \$14, \$21, \$32 and \$41. If a gift will be given for any purchase of \$100 or above, estimate whether Victor can get the gift. Explain briefly.

19. The following frequency polygons show the results of S2A and S2B students in a Mathematics examination.



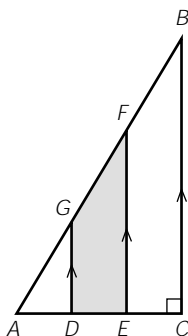
- In each class, how many students are there whose scores are below 40.5?
 - In each class, how many students are there whose scores are 70.5 or above?
 - Which class of students perform better in general? Explain briefly.
20. Estimate the number of words in the following passage and illustrate the estimation strategy used.

Optical disks or compact disks make use of the laser technology to store information on metal plates. Data stored on optical disks can be accessed directly. Compact disks are excellent storage media because they have large capacity. Furthermore, stored data cannot be erased easily. Therefore computer software, computer games, electronic encyclopedia and other publications are stored on compact disks.

Not long ago, compact disks were "read only" storage media. Users could not write on compact disks. As technology advances, compact disk recordable (CD-R) and compact disk rewriteable (CD-RW) become not only available but more common.

Digital video disk (DVD), also known as digital versatile disk, is also an optical disk. Similar to optical disk, DVD uses the direct access method to retrieve data. DVD can store a greater amount of data than a traditional compact disk (CD). For example, a DVD can store a three-hour movie. A double-sided DVD can store 17 gigabytes (GB) of data.

21. In the figure, $\triangle ABC$ is a right-angled triangle where $\angle ACB = 90^\circ$. If $DG \parallel EF \parallel CB$, $AD = DE = EC = 2$ cm and $CB = 10$ cm, find the area of trapezium $DEFG$.



MC Question

22. Consider 5.002 04. To give the approximate value 5.0, how many significant figures should it rounded off to?

A. 1
B. 2
C. 3
D. 5

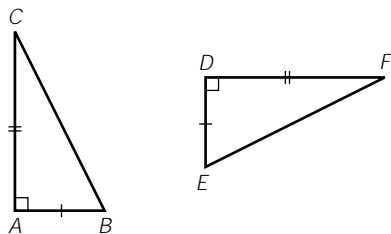
☐

23. Which of the following should be measured by a vernier caliper?

A. Height of a classmate
B. Weight of a schoolbag
C. Thickness of a \$5 coin
D. Length of a swimming pool

☐

24. In the figure, must $\triangle ABC$ and $\triangle DEF$ be congruent? If yes, give the reason.



A. Yes, S.A.S.
B. Yes, A.S.A.
C. Yes, R.H.S.
D. No

☐

25. Which of the following is a surd?

A. $\sqrt{\frac{243}{147}}$
B. $\frac{3\sqrt{8}}{\sqrt{50}}$
C. $\sqrt{0.000\ 9}$
D. $\sqrt{2.5}$

☐

26. Which of the following must be a factor of $3x^2 - 24x + 48$?

I. 3
II. $x - 4$
III. $x - 16$
A. II only
B. III only
C. I and II only
D. I and III only

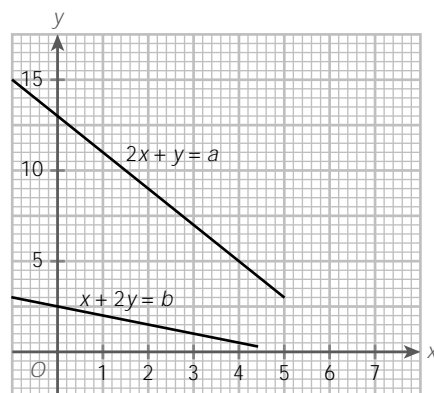
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27. Which of the following is an identity?

A. $-2x + 4y = -2(x - 2y)$
B. $8x - 6y = 2(4x - 6y)$
C. $(x + 2)(x - 5) = x^2 + 3x - 10$
D. $(x - 4)(x + 1) = (x - 1)(x + 4)$

☐

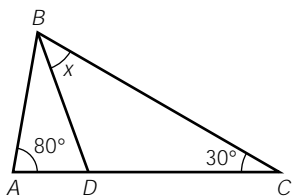
28. According to the graph, find the solution of the simultaneous equations $\begin{cases} 2x + y = a \\ x + 2y = b \end{cases}$.



A. $x = 4, y = 5$
B. $x = 6, y = 0$
C. $x = 7, y = -1$
D. It cannot be found.

☐

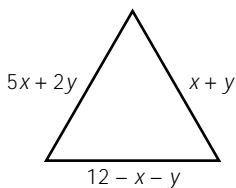
29. In the figure, ADC is a straight line.
If $\triangle ABC \sim \triangle ADB$, find x .



- A. 30°
B. 40°
C. 50°
D. 70°



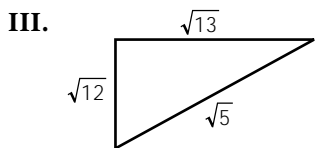
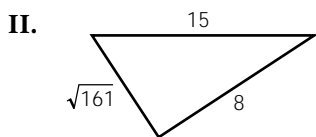
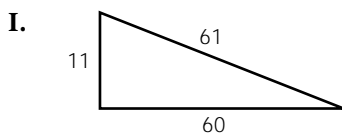
30. The following figure shows an equilateral triangle, find y .



- A. -2
B. 3
C. 6
D. 8



31. Which of the following are right-angled triangles?

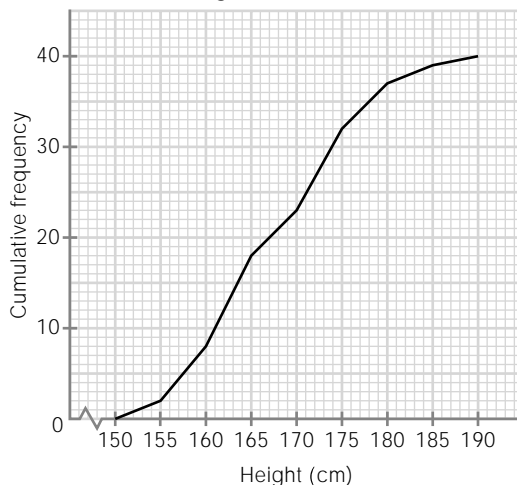


- A. I and II only
B. I and III only
C. II and III only
D. I, II and III



32. The following cumulative frequency polygon shows the heights of 40 students.

Heights of 40 students



Find P_{40} .

- A. 157 cm
B. 164 cm
C. 167 cm
D. 190 cm



33. Which of the following has taken compatible values under reformulation as the estimation strategy?

- A. $231.2 \times 8.05 \approx 200 \times 8 + 30 \times 8$
B. $28 + 32 + 45 + 64 \approx 30 + 40 + 50 + 70$
C. $496.2 \times 0.0198 \approx 500 \times \frac{1}{50}$
D. $19.4 + 19.6 + 20.3 + 20.7 + 19.9 \approx 20 \times 5$



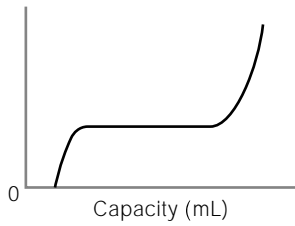
34. The weight of the school bag of Kim is 2.2 kg, correct to the nearest 0.2 kg. Which of the following may be the actual weight of Kim's school bag?

- A. 2.0 kg
B. 2.1 kg
C. 2.3 kg
D. 2.4 kg

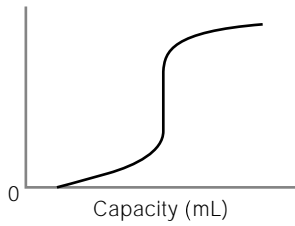


35. Which of the following cannot be a cumulative frequency curve?

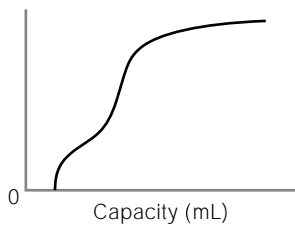
A. Capacity of vessels



B. Capacity of vessels



C. Capacity of vessels



D. Capacity of vessels

